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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,524	10/27/2003	Jonathan J. Morgan	117533	2232

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EXAMINER	
PICKARD, ALISON K	
ART UNIT	**PAPER NUMBER**
3673	

MAIL DATE	DELIVERY MODE
06/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/693,524	MORGAN, JONATHAN J.	
	Examiner	Art Unit	
	Alison K. Pickard	3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-22 and 24-30* is/are rejected.

7)☒ Claim(s) *23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The indicated allowability of claim 8 is withdrawn after further consideration due to McNickle. The examiner regrets any inconvenience this may cause.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 6, 7, 11-14, 19, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiler in view of McNickle (5,558,341).

Weiler discloses a sealing arrangement in a gas turbine comprising a hydrodynamic sealing member 2 attached to a housing by a resilient element 4. The resilient element is fixed to the upstream surface of the seal 2 (see lower portion of Figure 5). The element 4 is resilient and resists radial forces induced on the seal to keep the seal centered. And, the element is a rod and would resist axial forces on the seal. Weiler does not appear to disclose the ring is segmented. McNickle teaches a sealing arrangement comprising a hydrodynamic sealing member connected to a housing by resilient elements 26. McNickle teaches making the seal ring segmented with mating end sections to provide continuous sealing even during movement of the seal. The segments make installation easier. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the ring of Weiler with McNickles segmented structure to provide a seal that is easier to install while ensuring a seal during movement.

4. Claims 2-5, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiler in view of McNickle and further in view of Gardner.

Weiler does not disclose plural channels. Gardner teaches a sealing arrangement comprising a hydrodynamic sealing member that is biased by a spring element to maintain a constant clearance. Gardner teaches the use of channels (e.g. figs. 15-17) to enhance the lift-off of the seal (see col. 8, line 52-col. 9, line 25). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use plural grooves as taught by Gardner to improve the lift-off of the seal.

Regarding claim 3, Gardner does not appear to disclose the required depth of the channels. It is not considered inventive to discover the workable or optimum ranges by routine experimentation absent the showing of criticality for such ranges. See In re Aller, 105 USPQ 233, 235 (CCPA 1955). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to make the depth of the channels as required.

Regarding claims 28 and 29, Gardner also teaches coating the inner surface of the seal to reduce friction (col. 6, lines 15-24). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to coat the inner surface of the seal of Weiler with a coating to reduce friction as taught by Gardner.

5. Claims 1, 6, 7, 11-19, 22, 25, 26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mack in view of Weiler in view of McNickle.

Macks discloses a sealing arrangement for sealing between parts in a turbine comprising a hydrodynamic sealing member (e.g. Fig. 9) having an upstream surface, downstream surface, radially outer surface, and radially inner surface. An element (e.g. 64 or 80) is fixed to the seal

member on the upstream surface (either side can be upstream, see col. 4, lines 23-24). A sealing device or sealing means (e.g. 72, see Fig. 10) is provided between the sealing member and housing, on a down stream portion. Figure 8 discloses the seal can have a groove 54, which would create a clearance at the upstream end that is larger than at the downstream end. Macks discloses the element can be "any type of flexible tension material" to maintain the position of the ring (col. 7, lines 9-13). However, it is not clear if the element is resilient. Weiler teaches a sealing arrangement having a hydrodynamic seal fixed to a housing by a resilient element. Weiler teaches using a resilient element to keep the seal centered with respect to ensure the proper seals with respect to the housing and shaft. This arrangement also ensures the seal at high speeds. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the arrangement of Macks with the resilient element taught by Weiler to ensure the proper centering and sealing of the seal with respect to the other components.

Macks does not appear to disclose the ring is segmented. McNickle teaches a sealing arrangement comprising a hydrodynamic sealing member connected to a housing by resilient elements 26. McNickle teaches making the seal ring segmented with mating end sections to provide continuous sealing even during movement of the seal. The segments make installation easier. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the ring of Macks with McNickles segmented structure to provide a seal that is easier to install while ensuring a seal during movement.

Regarding claim 25, Macks does not appear to disclose the material of the sealing means 72. The selection of a known material based on its suitability for its intended use is not

considered inventive. See In re Leshin, 125 USPQ 416 (CCPA 1960). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to make the means from one of the claimed materials.

6. Claims 2-5 and 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macks in view of Weiler and McNickle and further in view of Gardner '493.

Although Macks discloses a groove (180 or 54), Macks does not appear to disclose plural grooves/channels. Gardner teaches a sealing arrangement comprising a hydrodynamic sealing member that is biased by a spring element to maintain a constant clearance. Gardner teaches the use of channels (e.g. figs. 15-17) to enhance the lift-off of the seal (see col. 8, line 52-col. 9, line 25). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use plural grooves as taught by Gardner to improve the lift-off of the seal.

Regarding claim 3, Gardner does not appear to disclose the required depth of the channels. It is not considered inventive to discover the workable or optimum ranges by routine experimentation absent the showing of criticality for such ranges. See In re Aller, 105 USPQ 233, 235 (CCPA 1955). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to make the depth of the channels as required.

Regarding claims 28 and 29, Gardner also teaches coating the inner surface of the seal to reduce friction (col. 6, lines 15-24). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to coat the inner surface of the seal of Macks with a coating to reduce friction as taught by Gardner.

7. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macks in view of Weiler and McNickle and further in view of Strub (3,756,673).

Macks does not disclose a passage from the upstream surface to the radially inner surface. Strub teaches a hydrodynamic sealing member with a resilient means 19. Strub teaches using a passage to supply pressure from the upstream side to between the seal and shaft to create the hydrodynamic film and center the seal on the shaft. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the passage taught by Strub to supply pressure to the clearance in Macks to help create the hydrodynamic film and ensure the seal is centered.

8. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiler in view of McNickle and further in view of Strub.

Weiler does not disclose a passage from the upstream surface to the radially inner surface. Strub teaches a hydrodynamic sealing member with a resilient means 19. Strub teaches using a passage to supply pressure from the upstream side to between the seal and shaft to create the hydrodynamic film and center the seal on the shaft. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the passage taught by Strub to supply pressure to the clearance in Macks to help create the hydrodynamic film and ensure the seal is centered.

Allowable Subject Matter

9. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

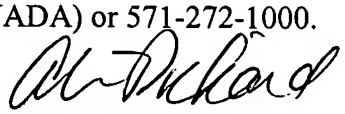
Conclusion

10. After further consideration, the allowability of claim 8 has been withdrawn. It is well known to provide a sealing ring in a plurality of segments to make installation easier. Also, as seen in McNickle, the segments can be formed to prevent leakage through segments.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alison K. Pickard whose telephone number is 571-272-7062. The examiner can normally be reached on M-F (10-7:30), with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tricia Engle can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alison K. Pickard
Primary Examiner
Art Unit 3673

AP